

**Slide 1: “Title Page”**

Thank you for coming. I hope this presentation is informative for all who may be interested in how modern technologies can bridge audiences to ancient objects. My goal is to discuss tools that allow for inclusive engagement for archaeological based destinations and institutions. No matter your skill level or profession, this presentation will hopefully supply valuable information for you. Of course, this presentation is operating under the assumption that you are considering digital tools for your site or institution. As we move forward into the future, technology is becoming more commonplace in society and how we receive valuable information. Regardless, this does not mean that a site or institution is lacking in anyway because it chooses to not include digital tools. I am providing this information as just another source to what is available to sites that house ancient artifacts when it comes to visitor engagement.

I want to give a formula for how I will be approaching the main question. Each slide will have images and main points. I'll be sure to give a visual description so all can enjoy the presentation. I do have a script that I will be sticking to and that will be made available also with all my resources for each slide. I would like to introduce the modern visitor and the changing requirements of both museum and archeological fields. It's because of the evolution of audience members that these technological devices have so much potential to better engage with them. Again, this is but one route that I have found to work well alongside a more active visitor when they engage with ancient materials. There is no assumption or claim that every institution or site will be bettered by the inclusion of digital devices. When approaching these tools, its important to consider the unique audience that you have and what works in engaging them. With this trend of being more considerate for the individual visitor, it is more important than ever to be sure that any method created to interact with them is effective and well-received by the majority.

After that, I want to present the smartphone as the main platform these technologies I will also discuss while presenting its benefits as a tool. Considering that a large majority of modern visitors have a mobile device, it is important to consider their attachment to it can be utilized to provide them a better experience when interacting with ancient materials. We will also touch about how one can pair a digital experience with a more traditional one when a visitor isn't so reliant on their cellphone.

We will then be going through 3D documentation, virtual reality, and then augmented reality. I will break down their pros, cons, and important factors so that any professional can have a holistic view of their properties before applying them. Additionally, I will present a case study that has seen these programs become successful amongst audiences who engage with the ancient world and how they are beneficial to ancient sites and objects. Hopefully, by the end, these programs will seem less scary and untamable and more easily accessible devices for the trade.

Let's get started!

**Total Word Count: 523 Words**

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**Slide 2: “The Active Visitor”**

*Slide Description:* On the left side is a title that says, “the Active Visitor”. Below is the text that highlights the points that will be discussed further. On the right side is a circular shot of different people in a museum gallery. There are white arrows that point to random individuals with the text, “each one has a story of their own” and “each one wants that story to be able to connect with their museum experience”.

I want to make it clear that if I say “institution” or “site”, I am referencing organizations that house and maintain ancient objects and physical heritage, and/or archeological sites. Also, when I mention the “public”, “visitor”, or “audience”, I am referencing the general population who engage with ancient material through museums and archeological sites. I am not narrowing it down to any group that may have a specific need or interest to visit these places.

So, why should we care about tools of engagement? Haven’t these long-standing institutions already decided how they will present information? They have and cling to it like gum to your shoe despite the changes in the public. In addition, events such as the COVID-19 pandemic left millions at home, and away from ancient objects. In the end, we must question if traditional methods are going to suffice as the world progresses and unprecedented situations occur.

Since the turn of the century, physical institutions have faced pressure to update the experiences they give their visitors. As a form of recreation, historical sites and museums must compete with different entertainment industries. This leads them to produce an experience that is both educational and enjoyable to their visitors. In addition to this, recent generations of visitors have disliked the traditional process of having a narrative created by curators and archeologists presented to them. Instead, audiences want a narrative they can see themselves in and contribute to. This change has been called the “paradigm shift”, which was first introduced by Stephen Weil in his book, “Rethinking the Museum: An Emerging New Paradigm”. To those who are unfamiliar, a paradigm is a traditional model of protocol. Conventionally, it has been ignored that a visitor is a person with a unique mentality. This mindset has been morphed by individual experiences, cultural and socio-economic influences, etcetera. Lois Silverman, a professor of Museum Studies at Indiana University, began discussing this as early as 1995, so it is not a new topic by any means. This affects how an individual would interact with an exhibit or site. For example, a cultural native may have a different interaction with an archaeological site in their home country than a tourist who simply wants to mark it off their bucket list.

Additionally, the objects and sites have been the focus of an institution’s efforts, ensuring their conservation for future audiences. Honestly, these audiences are often generalized. Audience research is typically conducted with a specific project or demographic in mind, leaving unique visitors out. You see audience research conducted when you are asked to fill out a questionnaire or survey at the end of your visit to a museum or archaeological site. Recently, mobile applications of institutions even ask for user feedback if the geo-location tracking notices that you are near the museum or site.

One of the proposed solutions to giving a more engaging experience with ancient history is the concept of “meaning-making”. As said before, audience members will attach multiple values to an object or site. Traditionally, professionals in the field would attach the meaning to an object, not considering the meanings a visitor may apply. This has birthed a purely informational experience that is seen across many institutions and sites. Rendering knowledge about the ancient past does not have to be solely informative. One avenue suggested to counter this is to stop institutions from remaining “neutral” in social and civil discussions. Merging modern discourses, values, and issues with those of the past can make a bridge for audiences to have a unique relationship with it. At the end of it all, professionals must recognize that information is not the only thing a visitor looks for. Often, they simply wish to make a memory, and for that to happen, they must make their experience unique. This will require a tool that can enable such input, effectively.

**Total Word Count: 771**

*Slide 2 References:*

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**Slide 3: “A Tool in Your Back Pocket: The Smartphone”**

*Image Description:* At the top, there is the title, “A Tool in Your Back Pocket: The Smartphone”. On the left, the main points are listed to guide one through what I am going to discuss. On the right, there is a circular image of a young woman smiling down at her cellphone as she waits for a train. A black arrow points to her with the text, “I use my smartphone to engage with the world around me” above it.

Every day, almost all of us walk around with one of the most technologically advanced tools in our pocket. There are negative connotations smartphones have as a distraction from the world around the user. Regardless, it is also the hub where we receive and share information, interact with others, develop, and entertain ourselves. In the US alone, we see around 96 percent of the population having a cellphone, with 86 percent owning at least one smartphone, based on research done by the Pew Research Center. There is potential in an object that visitors already bring. The question is, how should the cultural hotspots of the world use it effectively?

As progressive movements that focus on accessibility, inclusivity, and sustainable archaeological tourism continue to thrive in the modern age, organizations have found that smartphones are not entirely a competitor for the visitor's attention. Considering that people associate creativity, active participation, instant access to information, and identity development with smartphones, it already promotes all the properties that are needed for healthy engagement. Already, sites and institutions connect with their audience via their smartphones by way of personal photography, social media, information discovery, feedback, and other first engagements with the ancient materials on-site. I can go into extraordinary detail about how cellphones were used during the COVID-19 pandemic by institutions and archaeological sites. For example, the versatility of those two fields was highlighted during heavy lockdown where they used mobile applications on cellphones to give private tours and meet-ups, display objects and information and connect with audiences in all their niche interests involving ancient cultures. Monetization is also possible with digital content and unique events or charging a one-time fee for a mobile application download, further providing resources for technological inclusion.

We also must be aware of how cellphones and smartphones support accessibility for archeological sites and museums. Since Apple launched its iPhone 3GS, screen readers have been available in smartphone Operating Systems. For the visually impaired, it announces text and commands on the screen using text-to-speech. It even converts text into sign language or other languages to further aid the hearing impaired, for those with both hearing and vision impairment, and foreign visitors. For those with mobility impairments, GPS technology aids them in navigating a site or institution at their own pace and customizing tours to their abilities and interests. Content can even be automatically displayed on a visitor's screen when they pass a certain checkpoint that the GPS technology recognizes.

There are concerns from the museum and archaeological professionals about the involvement of smartphones in the same environment as ancient materials. Personal photography is a frequent negative that I see across resources. It is often used, and some traditional professionals see it as intrusive, superficial, and noisy in an environment where quiet contemplation is supposedly required. Additionally, there are concerns that the flash of smartphone cameras can cause an imbalance in the fragile environments of ancient objects. As said before, cellphones are seen as a distraction to visitors from their physical surroundings, causing them to not engage materials or even be a threat to them (i.e., bumping into an object while trying to take a picture or looking at their phone).

To answer these concerns, we must remember that visitors come to see ancient objects and sites to immerse themselves in new worlds. How visitors do that has changed, and it isn't

entirely something that should be feared. Digital inclusivity does not mean digital dominance. The traditional process of storytelling and constructing a narrative for ancient objects can be preserved. It is important to consider the smartphone as a tool to enhance that process, but not the only medium to engage with it. Allow visitors to make their own choice of whether they wish to interact with materials and sites in a more traditional way or use any digital tools available. Giving them this choice is what allows them to control their own experience, which we've seen is the direction visitors are going when it comes to interacting cultural heritage. Also do not neglect groups that are unable to provide their own technology. Offering a select number of iPads or tablets or multimedia devices to be rented or loaned out allows for everyone to enjoy whatever experience they choose. Though encouraging digital inclusion, also ensures that an institution does not alienate certain audience groups, such as the elusive younger generations who are more technologically savvy and dependent. Ask visitors to use a certain hashtag when they share pictures of the site on their social media accounts. If you have a new, shiny mobile application, give incentives to use it like games or more, exclusive information from behind the scenes of a museum or archaeological dig. Embracing smartphone technology could be what changes the image of history for audience members who believe these institutions and sites are dusty old reminders of the forgotten past. This may make you sound like a grandfather trying to stay "hip" to better connect with his grandkids. If grandpa doesn't forget *why* he wants to connect with his grandkids in the first place, the means is not always as big of an issue as one thinks.

Regulations can be put in place for cellphone use as they already are in most cultural heritage environments (i.e., no flash photography, or no photography without a permit, limit cellphone use here out of respect for other visitors or the culture). My final words in favor of smartphones are to consider what you do on your trip to the local museum or an archaeological site. You enter, snapping photos of all your favorite objects or moments on your phone. Once you leave for the day, you upload the photos to Facebook or Instagram, using the geo-location feature to show which historical site you were at and using a variety of hashtags that define your experience. Maybe you even blog about it or include the experience in your podcast. Either way, by doing this, you extend the reach of these objects without even a second thought while also highlighting the personal interaction you had with them. You function as a free advertisement to others to enjoy the same experience you did. These individual experiences are a treasure trove of information for professionals as they continue to develop engaging narratives and environments for their audiences.

Next, let's dive into the programs that can be used on the platform of a visitor's smartphone. The benefit here is that after an institution develops a program, the smartphone is a free springboard to get it to audiences.

**Total Word Count:** 1171

*Slide 3 References:*

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Theopisti Stylianou-Lambert, “Photographing in the Art Museum: Visitor Attitudes and Motivations,” *Visitor Studies* 20, no. 2 (2017): 115, <https://doi.org/10.1080/10645578.2017.1404345>.

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#### **Slide 4: “3D Documentation & Virtual Reality: So Real You Can Touch It”**

*Image Description:* At the top of the slide is the title, “3D Documentation & Virtual Reality: So Real You Can Touch It. Below on the left side is an image that highlights how two images of one of the remaining Buddhas of Bamiyan created a 3D model. On the right are two images of structures, one an arch and the other a group of buildings, which demonstrate that 3D models can be complete even if the physical object is not.

In almost all standard archeological digs, documentation is essential. I remember my archeology professor in undergraduate college would very curtly summarize archeology as authorized destruction in the pursuit of information. As we dig through history, we are actively destroying the archeological record and its context. The archeological record is the physical evidence we find. The context is how we find these items and their position in both time and space. Through association with other items and depth in the Earth, we can gather valuable information about the culture in question. New methods to invigorate this process are being evaluated daily in archeology, especially when reality-based information is not available in its entirety. For example, a building is partially standing still, or a vase has been smashed and all we have is the base. 3D modeling comes in to complete the picture, acting like clay being molded by a sculpture. Through graphics software, a person can take the factual information that we have,

and then build off it with prior knowledge of how objects or structures have been built in this culture.

So, let's explain what 3D documentation is. Using a variety of sensors, image data, 2D maps, and finally, classical surveying (i.e., GPS or total stations), data is collected. Total stations are often used in archeology and are used to read slopes between the device and a particular point while also deciding precise locations that can be laid out on a digital map. This type of information is important for exact locations, masses, distances, and the measurements of certain features or structures. Once this data has been collected, a three-dimensional model is constructed in a program using whatever information is available. To generate a 3D model of a large site efficiently, would require a list of properties. These properties would include accuracy, portability (due to the accessibility of sites, lack of electricity, and rough terrain), low cost (most excavations run on tight budgets), speed (to keep from impeding workers or visitors), and then flexibility (due to a variety of objects and structures that can be found, different scales and application to different conditions should be available). A method that I have seen that includes these properties is the image-based method. Image data can be turned from two-dimensional information into 3D information using mathematical formulas and requires at least two images. These images are typically high-definition photographs from multiple angles. This method is great for lost objects, geometric shapes, free-form shapes, and low budget, along with any constraints with time, money, or workforce. Certain things to consider when working with 3D documentation are the following: ensuring the quality of the data being used to make the model and understanding how time-consuming it is to obtain high-resolution image data. Next, filling any holes in the 3D model due to data from multiple sources, and finally, balancing the samples of rough terrain to flat areas so it doesn't disfigure the model too much.

Multiple times, 3D documentation is used in virtual reality. Now, virtual reality is popular in the gaming world due to its ability to submerge a user into a completely virtual environment. This environment is usually complete with sound and other stimulations, such as vibrations. We've seen themes in VR and 360-degree tours that reflect the public's interests in faraway archaeological sites or museums. Google Art and Culture have launched VR tours of around 1,200 museums and exhibitions, with that number growing every year. VR headsets have become quite versatile as well, with devices like the Oculus Rift or Samsung Gear VR set no bigger than a pair of snow goggles.

One of the biggest things that attracts archaeologists and museum professionals to VR is the uses it has for mitigating over tourism to some of the world's most visited cultural heritage sites. Especially after COVID-19, which saw a lot of these sites and institutions empty of visitors, there was a revival in sustainable archaeological tourism. Through VR, visitors can engage with ancient materials without interacting with the fragile sites and objects. Going further, VR has shown to stimulate the user's mind more resulting in lasting memories of their experience and an increased interest in the original site and objects.

**Total Word Count: 779**

*Slide 4 References:*

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### **Slide 5: "Bringing VR to the Museum of the Bruittians and the Sea"**

*Image Description:* At the top is the title, Bringing VR to the Museum of the Bruittians and the Sea". Below, on the left side is a list of points I will be covering. On the right is an image of ideal distances between a user, the controller pad and the main screen. Next are three images of different mounting possibilities for the main screen and its controller pad.

I have discussed visitor-focused points already, but let's focus on a VR program that was created using a UCD (user-centered design). This approach sees the intended users of this program as the focus of both the development and design of the project. Both new and experienced users aid in decision-making to ensure a user-friendly interface and experience. Basically, you can provide a program that can adapt to the variety of visitors who use it, so your luddite visitors can enjoy a program alongside your tech-savvy ones.

A VR exhibit was developed for the small archaeological museum, The Museum of the Bruittians and the Sea, which is in Cetraro, Italy. It was placed in the first section that holds objects from the Hellenistic Period. The exciting thing about this project is they take into consideration that archaeological museums are small, with limited budgets. The VR exhibit is constructed using dual monitors and desktop device controllers instead of the more immersive, wearable technologies, as we see in Oculus Rifts. Certain properties for the visual aspect of this project need to be in place to ensure that the VR engages with users both effectively and without limitations. The high-definition monitor should be at a viewing distance that allows for multiple users to see the screen. The larger the screen, the farther users can stand away from it, allowing for more visitors to be involved. This requirement also goes for the quality of the screen. A higher-end, clearer screen can be seen better by many. An incorrect distance can lead to issues such as disorientation or maybe even nausea. As someone who has played immersive VR games, I can assure you that they can make you motion sick if you are not orientated right. Testing out comfortable distances from the screen, based on the quality of the one you have, can ensure your visitors do not grow uncomfortable. If you have not noticed, all these required qualities make it impossible for the screens involved in the VR project to be touchscreen, unless a secondary screen is involved to control the first from a fixed position. Another possibility is the presence of an operator to relinquish control to guests who want to use the VR experience. The first choice of

using a fixed touch screen was selected for this project, as seen on the slide. This is because the presence of museum staff cannot be guaranteed to work the exhibit.

The project ensured that anyone, from any background, could use the VR exhibit, no matter their technical experience. This goal ensured that both manual input devices (i.e., a mouse) were alongside more modern devices such as the touch screen tablet, citing the heavy use of smartphones as a reason the tablet would be necessary. In addition, the VR experience itself is not made too difficult. Tasks are given to the user, and grow progressively harder, but do not ever become impossible to achieve. The program itself is set up with three levels that the user can engage with. The first allows for language choice and which experience the user desires. After this, the second level is available where, depending on the choice of the user, the Tomb of Treselle or an underwater environment becomes accessible. Both environments contain the artifacts around the user in the museum, in their original context when found. When a user selects an object, they are then taken to the third level, where they can manipulate the object as well as learn more information about it. This process can ensure the safety of the physical site without distancing visitors from the information the site can provide.

Considering the themes in modern institutions and sites that revolve around the visitor, this project is a true pioneer of its kind. Especially considering that it was achieved in a small museum with an extremely limited budget. These kinds of projects are more attainable if you have the ability of the MET or the British Museum, where thousands of visitors bring income to support projects more effectively. Also, I see the potential to build on a project such as this. With 3D documentation becoming a cornerstone in modern archaeology, institutions and archaeological sites have the visual information already to make virtual environments. With a little digital rendering (modeling) and polishing, site documentation can lead to being the very thing that brings people to where we deposit these archaeological finds. Given more time and resources, institutions can dedicate more to such a project, building it up from their feedback as well as visitors.

**Total Word Count: 826**

### *Side 5 References*

Loris Barbieri, Fabio Bruno, and Maurizio Muzzupappa, "User-Centered Design of a Virtual Reality Exhibit for Archaeological Museums," *International Journal on Interactive Design and Manufacturing* 12, no.2 (2018): 561-571, 10.1007/s12008-017-0414-z.

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### **Slide 6: "Shaping the World with Augmented Reality"**

*Image Description:* At the top is the title, "Shaping the World with Augmented Reality". On the right is the image of a generic quick response, or QR code. It resembles a traditional barcode but shaped in a cube with other unique cube markings within.

Augmented Reality may sound foreign to some of you, and you are probably unsure if it is a user-friendly medium for engaging with ancient materials and sites. Surprisingly, the world is already obsessed with various programs that use Augmented Reality. If you play Pokémon Go

or use Snapchat and Instagram, you are using AR. Unlike VR, AR allows for more interaction with the world around the user where digital alterations lie over an environment. To do this, AR can be implemented in two ways: markerless and marker-based. Markerless AR gets user positioning data gotten by a visitor's smartphone, pinpointing their location, and then downloading the necessary digital data that the point needs. A simpler approach is marker-based AR, which needs physical markers to do the same thing. QR codes are a good example of a marker as they can hold information in a single symbol that is easily scanned by a user's smartphone. AR is typically favored by historical institutions due to its size being confined to one's smartphone and that is usually a less costly venture than immersive VR. Additionally, AR can give a detailed didactic script, visualize missing elements of an object, or allow for a user who needs a more intimate engagement with an exhibition or site for accessibility purposes. To help you visualize what AR can do, imagine that you come upon the ruins of a building. The foundation is what is left of this building. Beside these ruins is a post with a QR code on it. You hit the button on your smartphone for the QR code scanner, scan it, and it takes you to a specific website or mobile application you can download data. Within seconds, you can lift your phone and see a complete structure sitting atop the ruins, presented how historians believed the building would look like. This kind of interaction sticks with visitors better; the imagery sticking in their minds more than words on a placard would.

There are complaints against AR and its technical needs. To function properly, AR does require good lighting which can exclude items that have specific environmental needs. Extremely sensitive items may not be able to be included in the AR program, just because you don't want to encourage visitors into using a flash to view a QR code better. So, my recommendation for this is if you have a site or a collection that is sensitive to certain environmental changes, like increased lighting, then it may be best to focus your efforts on a markerless AR program. These are not as difficult to produce as one would think. Developing an app or program that allows a user to give rights to geolocation tracking would allow for any object or site to be involved since no marker would be there to be scanned. I do suggest this for sites or museums that do have an app or program already developed or being developed because including this kind of programming would not require much. You digitally drop pins on a virtual map and attach to these pins the information and data you want. Almost like a QR code but with more technological work. The cost of a custom-built, multi-feature AR app is quoted by many development companies at being around 300k. Now, be aware that this is a cost for really developed apps and this cost can go down for a variety of reasons (i.e., a longer timeline, a smaller amount of virtual items that need to be made, including your workers to aid the project with information and man-hours, or not allowing users to select what is augmented). I have seen museum institutions integrate this cost into membership fees, entry fees, or even make it a special event that users can pay admission to. There is a lack of material documenting how archaeological sites can swallow costs as well, but they can follow the example of museums to give visitors a more engaging experience. Multiple funding opportunities have appeared as well for such projects, as the world keeps pushing for more digital advanced experiences.

Now, we're going to move into an example of AR being used in the setting of ancient archaeological ruins.

**Total Word Count: 742***Slide 7 References:*

Areti Damala, Isabelle Marchal, and Pascal Houlier, "Merging Augmented Reality Based Features in Mobile Multimedia Museum Guides," in *Proceedings of the XXI International Symposium CIPA 2007* (Athens, Greece: Athenai, 2007), 260.

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**Slide 7: "Under the Sea at Baiae"**

*Image Description:* At the top is the title, "Under the Sea at Baiae". Below is the image of a Samsung smartphone inside a black and orange protective case with five buttons on the right side. On the right of the slide is two images. The top image displays two QR-like markers at the bottom of murky water. Below this image is the AR rendered scene, complete with the black and white checkered floor and mosaic and colorful walls. A simple stool is the main focus of the scene.

Underwater archaeology is such an exciting branch of the field. I've done dives to archaeologically survey Roman ships off the coast of Spain, near the island of Menorca. It honestly made me consider using my degree and diving license for something much cooler and exciting than land archaeology.

The project is based in the city of Baiae, which is found near Naples, Italy. Once home to high-class villas and all the luxuries that the wealthy inhabitants could afford, it is now semi-submerged. Nearby Vesuvius is to thank for this slow process over the last 2,000 years. The site is no deeper than six meters in the water, so they are easily accessible to divers. Teams at the site have decided to use AR to complete the image for both archaeologists and visitors alike since some of the structures are no longer standing. The project focuses on the Villa con ingresso which sports a beautiful black and white mosaic in one of its rooms. Using a combination of camera images and sensory information, which are then stored in memory, the AR system picks up the markers. Remember, markers are physical points in an AR program that allow for information to be received, typically via scanning a certain code. Atop these physical markers, whole structures can be rendered, or digitally rebuilt in plain terms.

The amazing thing is all this was done and evaluated via a Samsung S8 which was housed in a Diveshot, protecting it from the murky waters. To cater to the fact that the Diveshot only allows users to use the five buttons on the side of the case and not the touchscreen, the program was developed to only use these five buttons. The options on these buttons include starting the AR program or recording with the camera. The screen of the smartphone would be split in two, with the left side showing the camera image while the right side had the buttons and their functions. If a button could not be used or was not necessary, it is removed from the screen. Once the camera sees the markers, the AR would implement the rendered image of the villa. The novel AR system received positive feedback from the divers who tested it, and there are plans for it to be available to casual visitors and tourists to the area.

This project is exciting since it uses AR in an environment so foreign to where the program is typically used. There are other examples of AR being used in archaeology. For example, ArcheoGuide has been popular in recent years for supplying personal tours through archaeological sites using AR. It tracks the user through a site, augmenting ruins into their former glory. It can engage the user with a more unforgettable experience that will leave a lasting, positive memory of ancient materials.

There are reasons why I picked this project to focus on. Surprisingly, this is not a niche group we are engaging here, but it is typically not the first one an institution thinks of when engaging the public. Underwater tourism is growing in popularity as people look for more extreme and unique ways to entertain themselves. Considering that the Earth is covered in oceans we barely understand, I can see why thrill-seekers would look to the water. The Professional Association of Diving Instructors has issued 27 million diver certifications throughout the world since 1967. Today, that stands for a large amount of audience members who could enjoy less accessible archaeological sites. Additionally, underwater tourism has been fighting to remain sustainable as archaeological tourism has. Our oceans have taken as much of a beating as our artifacts and sites have. To me, this shows similar motivations aligning to ensure underwater archaeology sites are kept for future generations. To do this, I predict that modern technologies will continue to become involved.

**Total Word Count: 728**

*Slide 7 References:*

Jan Cejka, Attila Zsíros, and Fotis Liarokapis, "A Hybrid Augmented Reality Guide for Underwater Cultural Heritage Sites," *Personal and Ubiquitous Computing* 24, no.6 (2020): 815-828.

Lemmin-Woolfrey, U. (2020, June 29). Is the future of travel underwater? BBC Travel. Retrieved June 24, 2022, from <https://www.bbc.com/travel/article/20200628-is-the-future-of-travel-underwater>.

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**Slide 8: "Conclusions & Moving Forward"**

Hopefully, this presentation has been informative about only a few of the technological-based programs that can be used on a visitor's smartphone. Maybe it will incite you to explore other programs that are both interactive, educating, and engaging for your cultural heritage

institution or site. My goal was to present these tools in a way that makes them possible and not something that requires a whole team of IT specialists.

Before I summarize all the information I just covered, it is important to understand your own audience group as well as the capabilities of your site. Despite the “active museum visitor” becoming a norm amongst those who visit museums and historical sites, the individuals who visit your site are unique. If your visitors are not typically called to engage with material through their mobile devices, are within demographics that don’t use them at all, or you have settled on a mode of engagement that has worked, then you can hold off on technological inclusion. Digital engagement is not the only way institutions can incorporate the needs and desires of an active visitor, though it has been proven to be effective. Also, it is not wise to begin these ventures if your institution does not have the capabilities to develop them fully and then proceed to maintain them. In the end, it can result in wasted resources and time with no useful end-product.

If you decide to move forward with any of these examples of technological inclusion, I recommend beginning with 3D documentation. Like I said, it is already a well-known form in historical institutions for the fact that paper documentation has grown obsolete as the main method of recording physical history. On top of that, you can decide where on the spectrum you want to sit regarding cost, equipment, implementation, and so on. If you want to take multiple photos with your iPhone or your company camera, then you’re able. Also, if your dig site owns a total station – as many do – then you already have the equipment to take high-quality scans of objects. Taking this visual information and rendering a 3D model can be as simple as uploading the images to a program and having it manifest the model, with only a bit of fine-tuning from yourself. After this, you have clear representation of objects and structures that can be handled, altered, and used anyway you want without any fear of damaging history. If you simply want to make objects more accessible via screens or tables, show them off better on a mobile app, or include them in a more intricate program, you can.

Virtual reality and augmented reality are not easy programs to implement, but I chose them because we see both a lot of big companies taking them on and making them familiar to the public. Google has created Google Expeditions and Google Arts and Culture, which got a lot of institutions through COVID-19. Other examples include YouTube and the Discovery Channel. Almost all forms of social media has some form of augmented reality, so these are not “new” programs that are unknown by your general audience. Though VR and AR are big projects to face, again, it all depends on the resources you want to invest. More resources invested will equal a better product. Once more though, you must ask yourself the question of what your visitors will respond to the best, and what will connect them to ancient materials better. Maybe none of these projects are possible with your delicate ancient objects or your visitors will not engage well to new technologies. All of these are the kind of preliminary inquiries that should have clear answers before you begin.

That’s concludes my presentation. As we wrap up, I want to give you all a few ways to contact me. You’ll find my name below along with other ways to contact me. The @payyourmuses Instagram account is a resource I manage for the National Emerging Museum Professionals Network’s advocacy committee. We focus on supplying resources to EMPs (emerging museum

professionals) and interns in the field while advocating for financial compensation for their work. If you are interested, we would love to have you follow! Also, I am always excited to expand my professional network on LinkedIn. If you have any questions, my email is there for you to reach out to me.

Thank you so much and thank you to AATAW for allowing me to speak. I hope to hear from any of you who have questions, even if it's to collaborate about the feasibility of one of these programs working for your ancient objects.

Take care!

**Total Word Count: 771**